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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,193	04/02/2001	Johannes-Jorg Rueger	10744/4200	1578
26646	7590	12/22/2003	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			BUDD, MARK OSBORNE	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/824,193

Applicant(s)

RUEGER ET AL.

Examiner

Mark Budd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *examiners answer*.

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This is in response to the brief on appeal filed 10-14-03.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

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6340858 Jaenker 1-02,

5384507 Takada 1-95,

5575264 Barron 11-96,

6247451 Estevenon 6-01.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

In view of applicants arguments, and to reduce the issues before the Board of Appeals the examiner hereby withdraws the following rejections:

Claims 8-17 under 35 USC 112-withdrawn; claims 1, 3,4, 18, 20, 21 and 22 under 35 USC 102 as anticipated by Japan (753) or Japan (684) - withdrawn.

Claims 1, 2, 8, 9, 18, 19, 25 and 26 are rejected under 35 USC 102 as anticipated by Moloney. Moloney teaches a stack of piezo-electric elements that expand and contract when charged by a drive circuit. Expansion and contraction of the stack is achieved by changing the thickness dimension of each piezo element. Because various factors such as ageing, temperature and wear can change the total travel distance (stroke) of the stack, Moloney provides a typical servo loop with a position sensor and feed back circuit to adjust the input for changes in the total stroke. This inherently compensates for changes in the thickness of any and all piezo elements in the stack.

Claims 3-7, 10-14, 20-24, and 27-31 are rejected under 35 USC 103(a) as being unpatentable over Moloney in view of Takada or Jaenker.

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Moloney teaches compensating a stack of piezo-electric elements in a fuel injector for travel distance based on variation, between actual and ideal conditions. Takada and Jaenker teach measuring the relationship between voltage and displacement and thus obtaining a correction factor. It would have been obvious to one of ordinary skill in the art to select from among known compensation techniques and thus to use voltage factors in the actuator Moloney.

Claims 15-17 are rejected under 35 USC 103(a) as being unpatentable over Moloney in view of Takada or Jaenker as applied to claims 3-7 and 10-14 above, and further in view of Barron or Estevenon.

These claims add that an EEPROM is used to record manufacturing history developed correction factors. Each of Barron and Estevenon teach using an EEPROM to record the history of each value of an injector system. To apply this known compensation method to a value using a specific transducer (piezo-electric vs magnetic) would have been within the skill expected of the routineer and therefore obvious to one of ordinary skill in the art.

(11) Response to Argument


Applicant argues that Moloney does not "compensate for deviations caused by variations in the piezo-electric elements layer thickness---" The examiner disagrees. The movement of the actuator is caused by variations in the piezo-electric elements thickness. Thus to correct for the amount of expression not being at the desired valve, one is both explicitly and inherently compensating for deviations caused by variations in the piezo-electric element's thickness. Note that even if thickness was not explicitly an issue in Moloney, Moloney inherently provides

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correction of any factor that would lead to an incorrect travel value (stroke). Thus if a kangaroo kicked the actuator and the serve adjusted the output stroke to the desired final position, Moloney would have inherently compensated for kangaroo kicks. Regarding claims 8 and 25, the initial voltage applied by Moloney would have been predetermined at some point in the design process (thus a definition is made). Then, as things are actually measured in the actual operation the feed back serve loop compensates for any errors in the initial charging voltage.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


M. J. BUDD
PRIMARY EXAMINER
ART UNIT 212

December 15 2003

Conferees: B. Mullins 



K. Tumai 